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Publication date:
2012

Document Version
Publisher's PDF, also known as Version of record

Antioxidative, DPP-IV and ACE inhibiting peptides from fish protein hydrolysed with intestinal proteases

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Proteins from fish tissue could be a promising source of peptides with a nutritional and pharmaceutical value, e.g. as treatment of type 2 diabetes with dipeptidyl peptidase IV (DPP-IV) inhibiting peptides, and could be used in health and functional foods and thereby increasing the value of secondary marine products.

The approach in this study is to hydrolyse skin and belly flap tissue from Salmon with the use of mammalian digestive proteases from pancreas and intestinal mucosa and test hydrolysates for antioxidative capacity, intestinal DPP-IV and angiotensin converting enzyme (ACE) inhibiting properties.

10kDa dialysis bags containing 10ml water were added to homogenized fish tissues, which were subsequently hydrolysed for 24 hours at 37°C and pH 8 with intestinal mucosa extract and/or pancreatin solution from pig. Dialysis bags were then removed and content were analyzed for free amino groups, antioxidative capacity by ABTS (2,2-azinobis(3-ethylbenzothiazoline-6-sulfonicacid)), DPP-IV and ACE inhibiting activity.

Degree of hydrolysis (DH) of hydrolysates was approximately 13% and 10% for belly flap and skin respectively. No clear difference was observed in DH between pancreatin and pancreatin + mucosa hydrolysates. No DH was obtained for tissues hydrolysed with only intestinal mucosa extract.

Preliminary results showed antioxidant activity and intestinal DPP-IV and ACE inhibiting activity in 10 kDa fraction from both belly flap and skin hydrolysates but with a higher antioxidative capacity in belly flap hydrolysates. No difference between hydrolysates with pancreatin and pancreatin+mucosa was observed.

Hydrolysates will be further fractionated by gelfiltration. Fractions will be analyzed for the three bioactivities and also presented.